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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,839	01/16/2004	James W. Lacy	7018	6962

7590 03/16/2005

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EXAMINER

ALI, HYDER

ART UNIT PAPER NUMBER

3747

DATE MAILED: 03/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

gm

Office Action Summary	Application No. 10/758,839	Applicant(s) LACY, JAMES W.	
	Examiner HYDER ALI	Art Unit 3747	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 1-10 are objected to because of the following informalities: in line 12 of claim 1, "tube" should read "retro-tube"; in line 13 of independent claim 8, "tube" should read "retro-tube". The new independent claim 8 should be renumbering to independent claim 6 in order to correct the typographical error. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbert (US 4,920,745) in view of Clemmens (US 5,050,378).

Gilbert discloses a typical tuned exhaust system can be of the expansion chamber type, as illustrated in FIG. 1, which can be considered geometrically divided into five sections, an exhaust header pipe 10, a divergent cone 11, an exhaust chamber 12, a convergent cone 13, and an exit pipe 14. Upon the initial opening of the exhaust port, the sudden release of the pressure in the engine cylinder forms a wave front that travels at high speed through the exhaust port and along the exhaust system. Upon the wave front reaching the divergent cone 11, the expansion of the gas creates an inverted or negative wave front (sub-atmospheric), which travels back to the exhaust port. The relevant portions of the exhaust system, namely the header pipe 10, and divergent cone 11 are designed so the negative wave front will reach the exhaust port while it is open. In this way an increased pressure drop is provided through the exhaust port, to assist in scavenging of the exhaust gas from the cylinder.

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This negative wave front is commonly referred to as a "scavenging pulse". As the initial wave front, somewhat reduced in strength, continues to move along the exhaust system, it encounters the converging cone 13, which functions somewhat as a closed end and causes the wave front to rebound as a positive wave front. Upon this positive wave front reaching the exhaust port, it provides a high pressure to resist the outflow of the gas from the cylinder, and may even reverse the flow back into the cylinder. The formation of the rebound positive wave is dependent on the design of the expansion chamber 12 and converging cone 13, and this design is selected so the returning positive wave front will reach the exhaust port after the transfer port is closed but before the exhaust port closes. The returning positive wave front is commonly referred to as a "plugging pulse".

Gilbert does not disclose secondary air tube communicating with the exhaust chamber. However, Clemmens discloses secondary air tube communicating with the exhaust chamber. See Fig. 10. Clemmens further discloses properly designed exhaust chamber for two stroke engine causes the reflected pressure wave to force the re-entry of some of the intake charge drawn into the exhaust chamber back into the cylinder after the intake transfer ports or passageway leading thereto are closed thereby increasing the trapped charge. See col. 4, lines 58-68 and col. 5, lines 1-3. It would have been obvious to a person having ordinary skill in the art to modify Gilbert by employing secondary air tube communicating with the exhaust chamber in order to add air to the exhaust chamber.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references by Holtermann et al and Ma both discloses exhaust duct for internal combustion engine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYDER ALI whose telephone number is (571) 272-4836. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HENRY YUEN can be reached on (571) 272-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Henry C. Yuen
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Group 3700